

WHAT IS CLAIMED IS:

1. A pressure sensor device having a temperature sensor comprising:

a pressure sensor for detecting pressure of a measuring object;

a temperature sensor for detecting temperature of the measuring object;

a sensor casing for accommodating a connector pin and the pressure sensor, the connector pin electrically connecting the pressure sensor and an outside circuit; and

an inlet port mounted on the sensor casing and having a pressure introduction port for introducing the measuring object to the pressure sensor disposed in the sensor casing;

wherein the temperature sensor comprises a temperature sensing element and a pair of lead wires and the temperature sensor is disposed in the pressure introduction port, the pair of elastically-deformable lead wires electrically connecting the temperature sensing element to the connector pin, and

wherein at least one of the lead wires is elastically deformed and held in the pressure introduction port, so that a reaction force generated at the lead wire is applied to the temperature sensing element to urge the same to an inner wall of the pressure introduction port.

2. The pressure sensor device according to claim 1,

wherein the lead wire generating the reaction force is so made as a U-shape, so that this lead wire and the temperature

sensing element are outwardly urged to the opposing inner wall of the pressure introduction port.

3. The pressure sensor device according to one of claims 1 and 2,

wherein a concave is formed at the inner wall of the pressure introduction port so that the temperature sensing element is at least partly embedded in the concave.

4. The pressure sensor device according to one of Claims 1 and 2,

wherein a concave is further formed at the inner wall of the pressure introduction port so that the lead wire generating the reaction force is at least partly embedded in the other concave.

5. The pressure sensor device according to one of claims 1 and 2,

wherein a pair of convexes is formed at the inner wall of the pressure introduction port so that at least one of the lead wires and the temperature sensing element is interposed between and firmly held by the convexes.

6. A method of fixing a temperature sensing element to a pressure sensor device which comprises

a pressure sensor for detecting pressure of a measuring object;

a temperature sensor for detecting temperature of the measuring object;

a sensor casing for accommodating a connector pin and the pressure sensor, the connector pin electrically connecting the pressure sensor and an outside circuit; and

an inlet port mounted on the sensor casing and having a pressure introduction port for introducing the measuring object to the pressure sensor disposed in the sensor casing;

wherein the temperature sensor comprises a temperature sensing element and a pair of lead wires and the temperature sensor is disposed in the pressure introduction port, the pair of elastically-deformable lead wires electrically connecting the temperature sensing element to the connector pin, and

wherein the method of fixing the temperature sensor to the pressure sensor device comprises:

a step of bending the pair of lead wires so that a distance between the temperature sensing element and an opposing portion of the lead wire is larger than an inner diameter of the pressure introduction port, while a distance of opposing portions of the lead wire at the lower end of the temperature sensor becomes smaller than the inner diameter of the pressure introduction port;

a step of connecting open ends of the lead wires to the connector pin;

a step of inserting the temperature sensor into the pressure introduction port of the inlet port; and

a step of adhering the inlet port to the sensor casing,

wherein at the step of insertion of the temperature sensor into the pressure introduction port, the lead wire will be elastically deformed so that a reaction force is generated at the lead wire and the temperature sensing element is urged to the inner wall of the pressure introduction port.

7. A method of fixing a temperature sensing element to a pressure sensor device which comprises

a pressure sensor for detecting pressure of a measuring object;

a temperature sensor for detecting temperature of the measuring object;

a sensor casing for accommodating a connector pin and the pressure sensor, the connector pin electrically connecting the pressure sensor and an outside circuit; and

an inlet port mounted on the sensor casing and having a pressure introduction port for introducing the measuring object to the pressure sensor disposed in the sensor casing;

wherein the temperature sensor comprises a temperature sensing element and a pair of lead wires and the temperature sensor is disposed in the pressure introduction port, the pair of elastically-deformable lead wires electrically connecting the temperature sensing element to the connector pin, and

wherein the method of fixing the temperature sensor to the pressure sensor device comprises:

a step of bending the pair of lead wires so that a distance between opposing portions of the lead wires is larger

than an inner diameter of the pressure introduction port, while a distance of opposing portions of the lead wire at the lower end of the temperature sensor becomes smaller than the inner diameter of the pressure introduction port;

a step of connecting open ends of the lead wires to the connector pin;

a step of inserting the temperature sensor into the pressure introduction port of the inlet port; and

a step of adhering the inlet port to the sensor casing, wherein at the step of insertion of the temperature sensor into the pressure introduction port, the lead wire will be elastically deformed so that a reaction force is generated at the lead wire and the temperature sensing element is urged to the inner wall of the pressure introduction port.

8. A method of fixing a temperature sensing element to a pressure sensor device which comprises

a pressure sensor for detecting pressure of a measuring object;

a temperature sensor for detecting temperature of the measuring object;

a sensor casing for accommodating a connector pin and the pressure sensor, the connector pin electrically connecting the pressure sensor and an outside circuit; and

an inlet port mounted on the sensor casing and having a pressure introduction port for introducing the measuring object to the pressure sensor disposed in the sensor casing;

wherein the temperature sensor comprises a temperature sensing element and a pair of lead wires and the temperature sensor is disposed in the pressure introduction port, the pair of elastically-deformable lead wires electrically connecting the temperature sensing element to the connector pin, and

wherein the method of fixing the temperature sensor to the pressure sensor device comprises:

a step of bending the pair of lead wires so that a distance of opposing portions of the lead wire at the lower end of the temperature sensor becomes larger than the inner diameter of the pressure introduction port;

a step of connecting open ends of the lead wires to the connector pin;

a step of inwardly pressing the opposing portions of the lead wire, so that such pressed opposing portions will be elastically deformed and a distance of such opposing portions become smaller than the inner diameter of the pressure introduction port;

a step of inserting the temperature sensor into the pressure introduction port of the inlet port; and

a step of adhering the inlet port to the sensor casing,

wherein at the step of pressing the opposing portions of the lead wire, the lead wire will be elastically deformed so that a reaction force is generated at the lead wire and the temperature sensing element is urged to the inner wall of the pressure introduction port after the temperature sensor is inserted into and fixed in the pressure sensor device.

9. The method of fixing the temperature sensing element in the pressure sensor device according to one of claims 6 to 8, wherein at the step of bending at least one of the lead wires, the lead wire will be so bent as to be a U-shape.

10. The method of fixing the temperature sensing element in the pressure sensor device according to one of claims 6 to 8, further comprises:

a step of forming a concave at the inner wall of the pressure introduction port, before the step of inserting the temperature sensor into the pressure introduction port, so that the temperature sensing element is at least partly embedded in the concave after the temperature sensor has been inserted into the pressure introduction port.

11. The method of fixing the temperature sensing element in the pressure sensor device according to one of claims 6 to 8, further comprises:

a step of forming a concave at the inner wall of the pressure introduction port, before the step of inserting the temperature sensor into the pressure introduction port, so that the lead wire generating the reaction force is at least partly embedded in the concave after the temperature sensor has been inserted into the pressure introduction port.

12. The method of fixing the temperature sensing element

in the pressure sensor device according to one of claims 6 to 8,
further comprises:

a step of forming a pair of convexes at the inner wall of
the pressure introduction port, before the step of inserting
the temperature sensor into the pressure introduction port, so
that at least one of the lead wires and the temperature sensing
element is interposed between the convexes.